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B. White
1-23-92

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

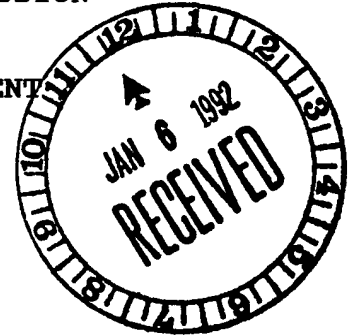


In re Patent application of Keith, J.)
Serial No. 07/542,149)
Filed June 22, 1990)

Examiner: C. Low
Art Unit: 1814

FOR PERTUSSIS TOXIN GENE: CLONING AND EXPRESSION

INFORMATION DISCLOSURE STATEMENT



Honorable Commissioner of
Patents and Trademarks
Washington, D.C. 20231

Sir:

In compliance with 37 CFR 1.97 and 1.98, attached hereto is a copy of Form PTO-1449 and copies of the documents listed thereon. These documents contain information which the Examiner may consider pertinent to the present application. The following is a concise explanation of the relevance of each listed item:

Cieplak et al, Proc. Nat. Acad. Sci., July, 1988 discloses an 8-residue sequence consisting of Tyrosine 8 to Proline 15. This sequence resides in the S1 subunit of pertussis toxin, and contains both the ADP-ribosylating activity and a neutralizing antigenic determinant. This article was published after the 03/25/86 priority date of grandparent application 06/843,727, and less than one year prior to the filing date of parent application 07/311,612, which is a CIP of 06/843,727.

Black et al., Science, 1988, disclose a direct correlation between the ADP-ribosyltransferase and immunomodulatory

activities associated with the S1 subunit of pertussis toxin.
The authors suggest that the enzymatic activity is necessary for both pathogenicity and optimum immunoprotection. They caution that attempts to formulate safer vaccines through genetic manipulation of this enzymatic activity run the serious risk of diminishing also the immunoprotective capacity of preparation.

Respectfully submitted;

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